

Appl. No. : 10/728,126
Filed : December 3, 2003

REMARKS

In the Office Action mailed May 30, 2006, the Examiner rejected all pending claims, Claims 1-22 and 55-65. Applicants respectfully request full consideration of the remarks contained herein.

Rejections Under 35 U.S.C. § 103

The Examiner rejected Claims 1, 9-19 and 22 as being unpatentable over Granneman *et al.* (U.S. Patent No. 6,183,565) in view of Matsumoto (U.S. Patent No. 4,859,625). The Examiner also rejected Claims 55-65 as being unpatentable over Granneman *et al.* in view of Matsumoto and further in view of Chae *et al.* (U.S. Patent No. 6,478,872). The remainder of the dependent claims were rejected over Granneman *et al.* in view of Matsumoto and further in view of various secondary references.

The Examiner stated that Granneman *et al.* teaches the general features of the claimed apparatus. The Examiner noted, however, that Granneman *et al.* does not teach a source of gas configured to supply reactants in alternating, separated pulses. Matsumoto is asserted to supply this deficiency. Matsumoto teaches a deposition system with a gas delivery system in which reactants are supplied in alternating, separate pulses to form layers with monolayer accuracy. The Examiner stated that the skilled artisan would have been motivated to combine these references “in order to form a film of mixed materials wherein the thickness of the film can be controlled in monolayer accuracy” or “to achieve rapid heat transfer between a substrate and a deposition station.” Further, in rejecting Claims 55-65, the Examiner asserted Chae *et al.* for teaching using two sets of gas channels, one for each of the reactants delivered in the alternating, separate pulses.

Applicants respectfully traverse the rejections.

To establish a *prima facie* case of obviousness, it is well-established that the Examiner must provide evidence “as to the specific understanding principle within the knowledge of a skilled artisan that would have motivated one with *no knowledge* of [the] invention to make the *combination* in the manner claimed.” *In re Kotzab*, 55 U.S.P.Q.2d 1313, 1318 (Fed. Cir. 2000) (emphasis added); *see also* M.P.E.P. §2143.01 (“The prior art must suggest the *desirability* of the *claimed invention*.”). (emphasis added). Thus, to establish obviousness, the Examiner must

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show why the skilled artisan, with no knowledge of the claimed invention, would choose the *particular* reactor of Granneman *et al.* for combination with the *particular* system of Matsumoto.

It is also well-established that simply providing individual advantages of individual references is not sufficient to *connect* the two references to establish a suggestion to combine. For example, in *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 231 U.S.P.Q.2d 81 (Fed. Cir. 1986), the Court reversed a finding of obviousness for claims directed to a “sandwich” assay for detecting chemical compounds. The assay used a particular type of antibody—monoclonal antibodies. Similar sandwich assays with a different type of antibody—polyclonal antibodies—were known. Sandwich assays offered the advantage of high speed detection of molecules and one asserted reference taught a sandwich assay using polyclonal antibodies. Another reference taught monoclonal antibodies, which had the advantage of being producible in large quantities. Sandwich assays using monoclonal antibodies were asserted to be obvious in view of these two references. The Court found, however, that the art lacked a motivation to combine these references. While each reference may have disclosed advantages for its particular subject matter in *isolation*, the Court found that none of the references suggested why monoclonal antibodies should be used in *combination* with a sandwich assay. As a result, the Court held that this combination was nonobvious.

Similarly, in the present case, the Examiner must supply evidence showing the desirability of the *claimed combination*, not the advantageous properties of each reference in isolation. The Examiner, however, has presented nothing to connect or combine the two asserted references of Granneman *et al.* and Matsumoto. Rather, the Examiner has provided individual references and stated their individual advantages. As in the case discussed above, this is not sufficient to establish obviousness.

The Examiner has simply selected, as a starting point, the references of Granneman *et al.* and Matsumoto and appears to have asked whether combining these references would give an advantageous result. In answer, the Examiner has stated that Matsumoto allows the advantage of monolayer deposition accuracy and Granneman *et al.* allows the advantage of rapid heat transfer. However, the Examiner has not provided any evidence showing why the skilled artisan, without any knowledge of the claims, would have selected Granneman *et al.* and Matsumoto for possible

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combination in the first instance; the Examiner's assertion that Granneman *et al.* and Matsumoto would be advantageous, if combined, is not a substitute for a teaching particularly pointing out why the skilled artisan would have selected Granneman *et al.* and Matsumoto for possible combination. *See In re Newell*, 13 U.S.P.Q.2d 1248, 1250 (Fed. Cir. 1989) (the fact that two references, if combined, happen to be advantageous "is not a substitute for some teaching or suggestion which supports the *selection* and use of various elements in the particular claimed combination.") (emphasis added).

Applicants note that the Examiner's reasoning, asserting the *individual* advantages of *individual* references would render nearly every invention unpatentable. As noted by the Federal Circuit, *every* invention is in some sense a combination of known elements. *See In re Rouffet*, 47 U.S.P.Q.2d 1453 (Fed. Cir. 1998) ("virtually all [inventions] are *combinations of old elements* .").

Applicants submit that, without the guidance provided by the claims, the Examiner has not provided any evidence for why the skilled artisan would have selected for combination the particular reactor of Granneman *et al.* with the particular gas delivery system of Matsumoto. Notably, neither Granneman *et al.* nor Matsumoto contain any cognizance of the desirability of an apparatus having the properties of the other reference, nor does any other teaching in the art. For example, the Examiner provides no teaching or suggestion for why rapid heat transfer would be desirable for a monolayer deposition system such as Matsumoto's, especially given the relatively small impact of heating rate on throughput for systems in which layers are built up a monolayer at a time. Moreover, even assuming, *arguendo*, that monolayer accuracy is desirable in some cases, there is no teaching or suggestion for why monolayer accuracy is desirable in the particular reactor of Granneman *et al.* In view of the lack of any particular teaching or suggestion particularly linking Granneman *et al.* with Matsumoto, Applicants submit that it is only the claims which have caused the Examiner to link Granneman *et al.* and Matsumoto together. It is well-established, however, that such reconstruction of the claimed invention using the claims as a template is impermissible. *See In re Gorman*, 18 U.S.P.Q.2d 1885, 1888 (Fed. Cir. 1991) (it "is impermissible, however, simply to engage in a hindsight reconstruction of the claimed invention, using the applicant's structure as a template and selecting elements from references to fill the gaps").

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Applicants note that, while acknowledging that the combination of Granneman *et al.* and Matsumoto could lead to problems with substrate instability, the Examiner has stated that the skilled artisan could solve these problems. Applicants note that such asserted "optimization" is moot, however, as the Examiner has not provided any motivation for the skilled artisan to make the combination and, ultimately, to solve the problems in the first instance. To the extent that problems would occur, Applicants submit that such problems weigh against making the combination.

At most, Applicants respectfully submit that the advantages disclosed by Granneman *et al.* and Matsumoto would motivate the skilled artisan to try Matsumoto's gas delivery system in different reactors, or to try different processes in Granneman *et al.*'s reactor. Obviousness, however, cannot be established by finding that it was "'obvious-to-try' ... to explore a new technology or general approach that seemed to be a promising field of experimentation." *See In re O'Farrell*, 853 F.2d 894, 7 U.S.P.Q. 2d 1673 (Fed. Cir. 1988).

Consequently, Applicants submit that the art of record fails to show the desirability of the combination of Granneman *et al.* and Matsumoto. As a result, Applicants respectfully submit that the art of record fails to establish a *prima facie* case of obviousness and does not render obvious any of independent Claims 1, 15, 55, nor their dependents.

In contrast, Applicants have developed a reactor and deposition station which allows rapidly switching gas flows to be used to deposit a high quality film. Neither this advantage nor any others are recognized by the art of record.

Accordingly, Applicants respectfully submit that the pending claims are allowable over the art of record. Applicants have not addressed the further rejections of each dependent claim as being moot in view of the amendments and remarks herein. However, Applicants expressly do not acquiesce in the Examiner's findings not addressed herein. Indeed, Applicants submit that the dependent claims recite further novel and non-obvious features of particular utility.

CONCLUSIONS

In view of the foregoing remarks, Applicants submit that the application is in condition for allowance and respectfully request the same. If some issue remains that the Examiner feels

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may be addressed by Examiner's amendment, the Examiner is cordially invited to call the undersigned for authorization.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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